DOOR HANDLE WITH INTERCHANGEABLE GRAPHIC DISPLAY

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DOOR HANDLE WITH INTERCHANGEABLE GRAPHIC DISPLAY

RELATED PATENT APPLICATIONS: This patent application is a continuation-in-part of United States Patent Application No. 09/207,221 filed December 8, 1998 (Abandoned) entitled DOOR ATTACHMENT WITH INTERCHANGEABLE DISPLAY which is a continuation-in-part of United States Patent Application No. 08/845,861 filed April 28, 1997 (Abandoned) and entitled DOOR ATTACHMENT. The present application also claims the benefit of United States Provisional Application No. 60/141,804 filed June 29, 1999 also entitled DOOR HANDLE WITH INTERCHANGEABLE DISPLAY; said applications in their entirety are hereby expressly incorporated by reference into the present application.

DESCRIPTION

TECHNICAL FIELD: The present invention relates generally to attachments for doors and in particular to door handles configured to accommodate interchangeable graphic displays.

BACKGROUND OF THE INVENTION: In commercial settings, door pulls and push bars that are mounted on entrance and exits doors of commercial buildings are generally appreciated exclusively for their functional characteristics as they relate to opening doors which are generally biased to a closed position. Predominantly, such doors are hinged for pivotation and are swung out of the way by a person desiring to pass therethrough. The conventional design for door pulls and push bars utilized on these door types are generally well known. In the instance of door pulls, an angled structure is usually employed having a free edge easily grasped by the user. A door pull is typically positioned on the side of a door that is pulled toward the user for opening. The location of the door pull is several feet above ground level at a location that is easily graspable by a majority of the public.

Often, the door pull has a vertically measured height that is greater than its horizontally measured width.

A push bar is often positioned on the opposite side of a door to a door pull. In many instances, especially in commercial settings, entrance and exit doors are arranged to open outwardly from the building's interior. This is a safety feature that helps assure that the door will open if rushed in an emergency situation from the inside. In keeping with this feature, push bars are often incorporated into a latching mechanism that upon actuation by a push pressure upon the push bar, a door latch is disengaged thereby allowing a previously latched door to be opened by a continued push force by the user. Like the door pull, the push bar is normally located on a door at a height easily embraced by an approaching user. Contrary to the door pull's design, however, the push bar generally has a width that substantially spans the door's width and resultingly has a horizontally measured length greater than its vertically measured height.

To improve the appearance of a business establishment, door handles and push pads are sometimes ornately designed. Rarely, however, are these devices customized for a particular business by incorporating a company logo or other signage into the handle or push pad. Furthermore, those occasional prior attempts to do so have produced less than satisfactory results. Specifically, door handles having a metal exterior surface shaped to incorporate a company logo and painted to correspond to the company's color scheme are known. Not only are such door handles exceedingly expensive to manufacture, repeated use of the door handle often causes the painted exterior surface to quickly appear worn, resulting in added costs if frequently needed touch-ups are applied.

While conventional designs and orientations for door pulls and push bars have considered their positioning and configuration for facilitating engagement by the user, the visual attention that each of these two structures typically receives has been overlooked. Each time a person enters or exits a building, they, either consciously or unconsciously,

make a visual fix on the door handle for engagement purposes, regardless of whether the handle takes the form of a door pull or push bar. That means, that even if just for a split second, not only is the person glancing at the door handle, but they are also concentrating on it. Given that many commercial buildings, and especially retail establishments, experience high customer traffic into and out of the building, the pull handles and push bars on the doors to the same are frequently viewed. Heretofore, the highly visible nature of these door handles has infrequently been commercially exploited, and has not been utilized for exchangeable print advertisement. Moreover, there have been no designs for such door handles that accommodate easy exchange of visual displays and permit the handle to remain installed upon the door during the exchange process.

In view of the above described deficiencies associated with known commercial designs for door handles, the present invention has been developed to alleviate these drawbacks and provide further benefits to the user. These enhancements and benefits are described in greater detail hereinbelow with respect to several alternative embodiments of the present invention.

DISCLOSURE OF THE INVENTION:

The present invention in its several disclosed embodiments alleviates the drawbacks described above with respect to conventionally designed commercial door handles and incorporates several additionally beneficial features that enhance their attractiveness to the relevant end user.

The door pulls and push bars designed according to the present invention capitalizes on the high-visibility characteristics of door handles in a commercial sense that has yet to be exploited. As explained above, door pulls and push bars on commercial doors, and especially those to retail establishments, receive a great deal of attention from consumers

as they enter and exit a building. The present invention takes advantage of the frequency at which these door handles are viewed by the public for advertising purposes.

The door handles of this invention have enjoyed a progressive development beginning with an initial door handle construction in which a permanent advertising piece is permanently fixed within or upon the body of the door pull or push bar. Through the development process, however, it has been appreciated that the ability to accommodate an exchangeable display insert provides multiple benefits. These benefits run not only to end users such as retailers who can promote various products and services to each person entering their establishment, but also to the supplier of the handles who can further exploit the advertising aspects of the invention through the continuing service required for manufacture and distribution of an array of advertising inserts which may be as simple as exchangeable self-adhesive stickers. Still further, the distributor of the advertising inserts can additionally sell advertising to particular entities desiring to have their products or services promoted through the channels of the retail utilizers of the door handles. For example, a seller of soft drinks would very much desire to have their product being the last impression made on a consumer entering a convenience store. Door pulls and push bars constructed and utilized according to the present invention provide this ability for a product or service provider to make their product or service the last thing on a purchaser's mind immediately before making a buying decision.

Not only are handles manufactured according to the teachings of the present invention configured to accept print advertisement for display toward an approaching person, but they are further enhanced by a construction that permits the easy exchange of different advertising pieces. This exchange of print advertisement may be accomplished in various ways and remain within the scope of the present invention. A preferred embodiment, however, which is illustrated in at least Figures 4 through 7 utilizes a three-part insert combination for creating the visual display that is to be presented to person's

approaching the door handles. It is possible, however, that a similar visual presentation may be accomplished using a monolithic insert properly constructed to make an appropriate advertising display. One of the benefits of using the three-part insert is the ability to use different materials for the construction of each sheet or layer. The forward and covering sheet that is exposed at the front face of the door handle can be made of a sufficiently durable material such as that sold under the trademark LEXAN by the General Electric Company. Normally, the front sheet will be transparent for permitting visibility therethrough. The intermediate sheet is constructed so that it advantageously accepts or includes a graphic design to be displayed. Lastly, the third and back sheet is utilized as a contrasting background behind the intermediate sheet for enhancing the desired display presentation.

When provided in the above described three-part assembly, the intermediate graphic display sheet can be readily exchanged for the purpose of easily presenting different appearances to approaching persons. In a most commercial of aspects, this graphic will be an exchangeable advertisement piece that can be distributed easily to an end user who exchanges the new intermediate sheet for that presently located in the door handle assembly. In this manner, advertising inserts can be easily, inexpensively and frequently distributed to the end user of the handle. It is also in this way that an entirely new type of advertising service can be offered and the ads be distributed through the channels of utilizers of the commercial door pulls and push bars described and disclosed herein.

It is also contemplated that further nuances may be added to the display handles such as special lighting effects or sound presentations that are either automatically or pressure responsively actuated by an approaching person's presence or the physical pressure exerted upon the door handle during use.

It should be appreciated that the present invention can be varied in construction to be accommodated on different styled doors. For instance, the door pull that is described

and illustrated herein may be utilized on an exterior door to a building, but it can be equally effectively utilized on a commercial interior door such as that to a refrigeration cooler in a convenience store setting. Normally, however, such a cooler door pull will have a width less than that of the exterior door pull because user leverage requirements are typically commensurately reduced. Still further, the general characteristics described with respect to commercial exterior door pulls are equally applicable to the cooler door pull configurations and the push bar configurations of the door handles of the present invention.

In one embodiment, the present invention takes the form of a door handle that is adapted to receive interchangeable display inserts. The door handle includes a handle body that is adapted to be coupled, that is attached, to a door of an enclosure. Normally, the door handle will have a graspable portion that is positioned at a spaced-apart distance from the carrying doors near side surface. Examples of such an enclosure include both private and commercial buildings, as well as interior enclosures such as cooler doors, freezer doors, and the like. A receiving space is provided within the handle body, and preferably within the graspable portion, for exchangeably receiving a display insert. A releasable closure mechanism is associated with the receiving space and adapted to be configured between an open configuration in which display inserts may be inserted and removed from the receiving space and a closed configuration in which a display insert is secured within the receiving space.

In another embodiment, the display insert is additionally included that is configured to be removably located within the receiving space for presenting a visual display to a person upon approach to the door handle. In one version, the display insert has at least two substantially planar members that are associated together to fill the receiving space so that they are held substantially stationary when installed in the receiving space. In this version, a protective front facing planar member is located at a front face of the door

handle and a graphic display containing intermediate planar member is positioned behind the protective front facing planar member. The intermediate planar member oriented so that a graphic display of the intermediate planar member is visible through the protective front facing planar member by a person upon approach to the door handle. While the insert members are described as planar, it is contemplated that any sheet-type configuration may be utilized.

In a complimentary embodiment, the present invention takes the form of a method for accommodating interchangeable display inserts in a door handle. The method includes providing a door handle that has a handle body attached to a hinged door of a commercial enclosure. The handle body includes a receiving space therein, preferably in a graspable portion, for exchangeably receiving a removable display insert. To achieve a display configuration, a removable display insert is installed in the receiving space for temporary display to persons approaching the door handle. For varying the display, accommodation for exchanging the removable display insert with a replacement display insert is provided for presenting an alternate visual display to persons approaching the door handle. In a preferred embodiment, the manufacturing technique for the handle body is extrusion molding resulting in the handle body being of one-piece construction.

The beneficial effects described above apply generally to the exemplary devices and mechanisms disclosed herein of the door handle. The specific structures through which these benefits are delivered will be described in detail hereinbelow.

BRIEF DESCRIPTION OF THE DRAWINGS:

The invention will now be described in greater detail in the following way of example only and with reference to the attached drawings, in which:

Figure 1 is an elevational view of two side-by-side commercial building access doors, each with door pull handles constructed according to the present invention mounted thereto.

Figure 2 is an elevational view of a single commercial building access door with a push bar constructed according to the present invention mounted thereto.

Figure 3 is an elevational view of a single commercial cooler or freezer door with a more narrow door pull handle than those illustrated in Figure 1 with respect to access doors mounted thereto.

Figure 4 is a front exploded view of a door attachment constructed in accordance with the present invention. In the vertical orientation shown, the door attachment is utilizable as a door pull, in a horizontal orientation it would be utilizable as a door push bar as illustrated in Figures 6 and 7.

Figure 5 is a rear exploded view of the door attachment of Figure 4.

Figure 6 is a front exploded view of a door attachment constructed in accordance with the present invention in the form of a door push bar assembly.

Figure 7 is a rear exploded view of the door attachment of Figure 6.

Figure 8 is a top plan view of a door pull body.

Figure 9 is an end elevational view of a push bar body.

Figure 10 is a rear exploded view of an alternative embodiment of a door attachment constructed according to the present invention.

Figure 11 is a rear view of an additional alternative embodiment of a door attachment constructed according to the present invention.

Figure 12 is a front view of a housing portion of the door attachment of Figure 10.

Figure 13 is a rear view of the housing portion of Figure 12.

Figure 14 is a partial horizontal cross-sectional view of the door attachment of Figure 10.

Figure 15 is a partial front view of a building having a pair of doors to which door handle assemblies are, one each, mounted thereupon.

Figure 16 is a top plan view of one door pull handle of Figure 15.

Figure 17 is a top plan view of a door pull body similar to that shown in Figure 8, and also including a spacing ridge or projection for separating different layers of a multi-layer display insert.

Figure 18 is a side elevational view of a push bar body similar to that shown in Figure 9, and also including a spacing ridge or projection for separating different layers of a multi-layer display insert.

MODE(S) FOR CARRYING OUT THE INVENTION:

As required, detailed embodiments of the present invention are disclosed herein; however, it is to be understood that the disclosed embodiments are merely exemplary of the invention that may be embodied in various and alternative forms. The figures are not necessarily to scale, some features may be exaggerated or minimized to show details of particular components. Therefore, specific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a basis for the claims and as a representative basis for teaching one skilled in the art to variously employ the present invention.

DETAILED DESCRIPTION RELATING TO THE EMBODIMENTS OF THE INVENTION SHOWN IN FIGURES 1-9 AND 17

Figures 1-3 illustrates three primary settings or locations at which various embodiments of the present invention may be utilized. Figure 1 illustrates a door assembly 7 configured as a pair of swinging access doors 10 typically found at commercial and retail establishments. As shown, each door 10 comprises a peripheral door frame 8,

typically constructed from metal, surrounding a plate glass or plastic sheet interior section 9. Each door frame 8 is hinged at an outer side edge to the building and the balance of the door 10 is permitted to swing about this hinged edge relative to the building. A door handle or attachment 11 constructed according to the present invention is mounted to each door 10 of the pair, preferably at a location on the frame 8 at the side edge opposite the hinged edge. The door handle 11 is constructed in the form of a door pull in Figure 1 and is therefore mounted on the pull side 14 of the door 10 proximate the door's 10 forward face 12.

Figure 2 illustrates a single building access door 10 having a push bar used by an approaching person to push the door open. In an optional configuration of the door 10, the push bar is a component of a pressure actuated latching mechanism for the door 10.

Figure 3 illustrates a single cooler or freezer door 10 having a door handle 11 constructed according to the teachings of the present invention mounted thereupon. As compared to the handle of the access door illustrated in Figure 1, the width of the cooler door pull is more narrow, at least in part because of the reduced amount of leverage required to open the smaller and lighter cooler door.

Referring to Figures 4-7, a door handle or attachment 11 is shown in the form of a pull handle. Attachment 11 is generally rectangular in shape and has two primary component portions: (1) a graspable portion 18 in which a housing portion 13 is formed and (2) door mounting hardware 17. In the preferred embodiment, these components are formed from extruded metal, preferably aluminum and together the components establish a handle body 16.

Attachment 11 has a backplate 21 and two parallel side members 25, all of which are constructed integrally with one another in that illustrated embodiment. Each side member 25 has a beveled front surface 27 to give housing 13 a smooth finish with rounded corners. A large rectangular forward opening 29 extends interiorly between front

surfaces 27. The width of opening 29 is slightly smaller than the width of housing 13 to provide opening 29 with a large area. Opening 29 is partially defined by a pair of inwardly extending flanges or retainer lips 31 along its front side edges. The inner surfaces of lips 31 are flat and parallel to the general orientation of housing 13. Lips 31 have rounded or tapered edges 33 on their front outer surfaces and have a generally consistent thickness and width.

Side members 25 each have a flat inner track or sidewall 41 which are parallel to one another and together partially define a substantially rectangular internal cavity or receiving space 19. Sidewalls 41 extend from lip 31 to a front surface of backplate 21. Backplate 21 has a slightly larger surface area than forward opening 29 as a result of the inwardly projecting retaining lips 31. Backplate 21 also has a threaded aperture or hole 51 located near each of its four corners.

Door attachment 11 has a detachable top cap or closing stop 53 and bottom cap or arresting stop 55 which are substantially identical in shape and size. In the illustrated embodiment, closing stop 53 provides a releasable closure mechanism for securing graphic display 6 within the housing 13. When viewed from above, caps 53 and 55 each have the same cross-sectional profile as the internal receiving space 19 in housing 13. Each cap 53,55 has a generally rectangularly-shaped elongate body 57 with a long flat rear surface 59, and a front surface 61 that is contoured to the shape of opening 29 and lips 31. The front surfaces 61 each have a pair of notched ends or shoulders 63 on their lateral sides which have flat vertical faces. Rear surface 59 has a pair of threaded blind holes 65 located near shoulders 63. The arresting stop 55 is configured to be secured in a lower open end portion of the receiving space 19, while the closing stop 53 is configured to be secured in the upper open end or access portion 20 of the receiving space 19. The stops 53,55, together with the retainer lips 31 define a display exposure frame 22 for a graphic display insert 6 when installed within the housing 13.

As shown particularly in Figures 5 and 7, door mounting hardware 17 is integrally formed with backplate 21 of housing 13. Door mounting hardware 17 in Figure 5 for a door pull configuration comprises a generally L-shaped protrusion having a stand-off or intermediate portion 71 and a mounting end or securable portion 73. Stand-off 71 protrudes at an angle away from backplate 21. This configuration of the securable portion 73 and intermediate portion 71 establishes a recess 15 between the face of the door and a back side of the graspable portion 18 of the handle assembly 11. It is this recess space 15 that accommodates a user's grasp about the door handle.

A back surface of mounting end 73 is substantially parallel to backplate 21 and has holes 75 for joining mounting hardware 17 to a door in a configuration such as shown in Figures 1 and 3. A vertically-oriented ridge or grip 77 is located on the side edge of the back surface of backplate 21 opposite the mounting hardware 17 for resisting slippage of a user's grasp from the handle.

In operation, bottom cap 55 is positioned in the lower end of the receiving space 19 in housing 13 such that its holes 65 align with the bottom two holes 51 in backplate 21. A set screw 79 is threaded into each set of holes 51,65 to secure bottom cap 55 in place. When bottom cap 55 is so installed, its rear surface 59 abuts backplate 21, its shoulders 63 abut the rearward-facing surfaces of lips 31, and its front surface 61 is substantially flush with opening 29.

Next, a series of rectangular display sheet inserts are placed inside the receiving space 19 in housing 13 on top of bottom cap 55. In the preferred embodiment, from front to back as illustrated in Figure 4, these inserts comprise a rigid transparent sheet 81, a graphics sheet 83, and an opaque backing sheet 85. Each sheet 81, 83, 85 is slightly less in width than the width of the receiving space 19 in housing 13, and slightly shorter in height than the height of housing 13. Sheets 81,83,85 are slidingly guided into the receiving space 19 in housing 13 by tracks 41. It should also be appreciated that the

three sheets as described have been found to provide a desirable effect, however, it is also possible to create similar effects using fewer sheets. The three-part configuration though, enables the thinner and less expensive middle graphic sheet 83 to be solely exchanged, while maintaining the "depth" effect produced by the three-sheet configuration. This facilitates the manufacture and shipment of substitute display inserts 6.

Transparent sheet 81 extends across opening 29 and its lateral side edges at its front face 82 abut the rearward-facing surfaces of lips 31. In the embodiment shown, the transparent sheet 81 is approximately 1/8 inch thick and formed from clear plexiglass or other suitably durable sheet material and establishes the predominant surface area of the front face of the graspable portion 18 of the door handle assembly 11. Graphics sheet 83 is placed against sheet 81 so that a graphic illustration depicted, preferably on its forward surface, is visible through the front sheet 81. Sheet 83 is approximately 1/16 inch thick and may be formed from many different materials, including a translucent sheet. Backing sheet 85 is positioned behind and against graphics sheet 83 to press it flat against sheet 81 and remove any remaining space from the receiving space 19 in housing 13. This tight fit prevents rattle between the components. Backing sheet 85 is about 1/4 inch thick and may be formed from white plexiglass to help make the translucent graphics sheet 83 more visible. After sheets 81,83,85 are in place, top cap 53 is secured at the top of housing 13 in the same manner as bottom cap 55. Caps 53,55 secure sheets 81,83,85 inside housing 13 primarily against vertical movement.

Door attachment 11 may be installed on a door either before or after being assembled as previously described. A common construction for a commercial door frame 8 to which the door attachment 11 is secured includes a ridge that is receivingly accommodated in the recess 76 running along the length of the mounting portion of the attachment 11. Fasteners such as threaded screws insert through holes 75 in mounting ends 73 for securing the door pull to the door frame. The configuration of stand-off 71

establishes a recess or space between the door and backplate 21 into which a user's fingers or hand may be inserted to grip housing13 for pulling the door open. Top cap 53 may be disengaged from the handle body to remove and/or replace the graphics sheet 83 with another graphics sheet. When the new graphics sheet is in place, top cap 53 is resecured to the housing 13. This sequence of steps may be repeated as often as necessary. The door attachment 11 need not be removed from the door in order to perform this interchangeable feature.

Figures 4 and 5 disclose embodiments of the door attachment 11 in a door pull configuration being elongately constructed in the vertical dimension, while Figures 6 and 7 disclose embodiments of the door attachment 11 in a push bar configuration in which the long dimension is horizontally oriented. The component parts of the two assemblies are essentially identical, however, accept for the portions which affect attachment to the door. In the case of the push bar pads of Figures 6 and 7, horizontally running receiving angles 90 are included at the back side of the assembly for mating engagement with similarly configured bars 92 which are typically part of the door latch assembly coupled to the door frame. Any suitable mechanism may be employed for securing the angles 90 to the bars 92 such as threaded bolts through apertures, clamps or securement straps.

Figures 8, 9 and 17 show cross-sectional profiles of the handle bodies of the attachment 11. Figure 8 illustrates the monolithic structure obtained from the extrusion process for the door pull embodiment of the attachment 11. Figure 17 shows the configuration of Figure 8, with a slight modification that incorporates an inwardly directed spacer projection 26 that is interstitially located between layers of the insert. The air space created between layers of the insert by the projections 26 permits drying of any moisture that comes between the two separated and adjacent layers thereby avoiding distortion of the desired display presentation that would result if water or other moisture

were permitted to remain for extended periods. Figure 9 shows a cross-sectional profile of the handle body in a push bar or push pad configuration depicted in Figures 6 and 7.

DETAILED DESCRIPTION RELATING TO THE EMBODIMENTS OF THE INVENTION SHOWN IN FIGURES 10-14

As may be appreciated from a comparison of the Figures, the embodiments disclosed and shown in Figures 10-14 have many similarities to those described above with respect to Figures 4-9. The door is described in greater detail as including a first edge, a top edge, a second edge and a bottom edge The first edge is pivotally attached to a building while the top, second and bottom edges are unattached. Fixedly mounted to a front side surface of each door is a door attachment 11a. While the door attachment 11a disclosed is a door handle, it should be understood that the terms "handle" and "attachment" encompass a wide variety of types of door attachments, including push pads and the like. Furthermore, while the attachment 11a is shown mounted on the door, it should be understood that the attachment is equally suitable for mounting on surfaces other than those described herein. Also, while a suitable graphic design (as illustrated in Figures 1-3 as graphic display 6) may include any artistic rendering, for most commercial establishments, the business name, logo and/or visual design which enjoys an association with the commercial establishment may be preferred. As is suggested herein, however, great value can also be derived from promotional graphics and advertisements displayed in the suggested manner. Furthermore, while the graphic design may include black or another color or colors of print on a transparent, white or other opaquely colored background, color combinations associated with the commercial establishment are generally preferred.

The door attachment 11a is mounted in proximity to the second or free edge of the door so that the door may be readily pivoted into an open position by grasping and pulling

the door attachment 11a. The door attachment 11a should also be positioned sufficiently above the bottom edge of the door so that it may be grasped with ease. For example, positioning the door attachment 11a about six inches from the second edge or free edge of the door opposite the hinges and about three feet above the bottom edge of the door should be suitable for the uses contemplated herein. Based on a variety of factors (such as the design of a building's exterior, the graphic design to be displayed thereby and the intended use thereof), the door attachment 11a may be variously dimensioned. It is contemplated that a height of about ten and one-half inches and a width of about seven and one-half inches will be suitable for many of both the handle and push pad-type door attachments. It should be noted, however, that some business logos are better suited for door attachments having dimensions and shapes other than those specifically described herein. It should be further noted that some commercial establishments prefer door-width handles and push pads which are typically sized to have a height of about six (6) inches and a width of about twenty-four (24) inches.

Referring to Figure 10, one embodiment of the door handle or attachment 11a is shown. Attachment 11a is generally rectangular in shape and comprises three primary components: a frame or housing 13a, a backplate 15a, and door mounting hardware 17a. In a preferred embodiment, these components are formed from aluminum.

As shown in Figures 12 and 13, housing 13a has a top member 21a, a bottom member 23a, and two side members 25a, all of which are integrally constructed with one another. Members 21a,23a,25a form a smooth, flush front surface 27a on housing 13a, and are beveled along their external surfaces to give housing 13a a smooth finish with rounded comers. A large rectangular forward opening 29a extends through front surface 27a of housing 13a between members 21a,23a,25a. The dimensions of opening 29a are slightly smaller than the overall dimensions of housing 13a to provide opening 29a with a large area. Opening 29a defines a thin flange or lip 31a along its

perimeter. The inner surface of lip 31a is flat and parallel to the general orientation of housing 13a. Lip 31a has a rounded or tapered edge 33a on its front outer surface and has a generally consistent thickness and width about its perimeter.

Members 21a,23a,25a each have a flat inner sidewall 41a,43a,45a, respectively, which are orthogonal to one another and define a rectangular cavity. Sidewalls 41a,43a,45a extend from lip 31a to a rectangular rearward opening 49a at the rearward surface 47a of housing 13a. Like forward opening 29a, the dimensions of rearward opening 49a are slightly smaller than the overall dimensions of housing 13a. Rearward opening 49a, however, is slightly larger than forward opening 29a to provide rearward opening 49a with a larger area than forward opening 29a.

Each side member 25a has a blind hole 51a extending outward from its sidewall 45a. Blind holes 51a are located adjacent to top member 21a near rearward opening 49a. Blind holes 51a are coaxial with one another and have shallow depths which do not penetrate side members 25a. Bottom member 23a has a pair of parallel through holes 53a which extend from its exterior to sidewall 43a. Holes 53a are located near rearward opening 49a or approximately symmetric about a midpoint of bottom member 23a.

Referring back to Figure 10, backplate 15a is generally flat and rectangular, and has a thickness which is slightly greater than a thickness of lip 31a. Backplate 15a has a rounded top edge 61a, and square bottom and side edges 63a,65a, respectively. Each side edge 65a has a blind hole 71a which extends inward adjacent to top edge 61a. Blind holes 71a are coaxial with one another and have shallow depths which do not completely penetrate backplate 15a. Bottom edge 63a has a pair of parallel blind holes 73a which extend upward into backplate 15a. Blind holes 53a are approximately symmetric about a midpoint of bottom edge 63a. Backplate 15a also has a plurality of mounting holes 75a which extend completely through it from its front to back surfaces.

Door mounting hardware 17a comprises three components: a mounting platform 81a and a pair of identical mounting brackets 83a. Mounting platform 81a is generally flat and rectangular, and has a sharp, wedge-shaped edge 85a on one end. Platform 81a also has a sharp, wedge-shaped recess 87a on a rearward surface located near an opposite edge. Recess 87a is parallel to edge 85a. Platform 81a also has a plurality of mounting holes 89a which extend through it.

Each mounting bracket 83a is a generally J-shaped member with a sharp, wedge-shaped edge 91a on one end. Brackets 83a have a sharp, wedge-shaped recess 93a on their forward surfaces located near their midpoints. Recess 93a is parallel to edge 91a. Each bracket 83a also has a substantially flat mounting end 95a located opposite of its edge 91a. Mounting ends 95a are essentially parallel to the linear portions of brackets 83a and have at least one mounting through hole 97a. Finally, each bracket 83a also has a plurality of mounting holes 99a which extend through their linear portions.

In operation, a rectangular transparent sheet 101a is inserted into rearward opening 49a and laid flush against the flat surface of lip 31a. Sheet 101a may be formed from rigid plastic or plexiglass, and is approximately the same size as rearward opening 49a. A graphics sheet 103a is placed against sheet 101a so that a graphic illustration depicted on its forward surface is visible through sheet 101a. Next, a rigid backing 105a is placed against graphics sheet 103a to press it flat against sheet 101a. Graphics sheet 103a and backing 105a are approximately the same size as sheet 101a.

With sheets 101a,103a and backing 105a in place in housing 13a, backplate 15a may be installed on housing 13a. Alternatively, backplate 15a may be installed on housing 13a prior to the installation of sheets 101a,103a and backing 105a. In either sequence, backplate 15a is joined to housing 13a with pins 107a which extend between holes 71a in backplate 15a to holes 51a in housing 13a. Pins 107a allow backplate 15a to be pivoted about their axes relative to housing 13a between an open position and a closed

position. With backplate 15a in the closed position, fasteners 109a may be used to secure the bottom edge 63a to housing 13a and prevent backplate 15a from moving to the open position. Fasteners 109a engage holes 53a in housing 13a and holes 73a in backplate 15a.

Mounting hardware 17a may be installed on backplate 15a either prior to the previously described assembly or after it. Mounting hardware 17a is installed by sliding edges 85a,91a into recesses 93a,87a respectively, so that holes 75a,89a and 99a coaxially align with one another. Next, fasteners 111a, such as the screws 113a are used to rigidly fasten mounting hardware 17a to backplate 15a. Finally, door attachment 11a is installed on a door 115a with fasteners 117a which insert through holes 97a in mounting ends 95a. This results in a recess or space between door 115a and backplate 15a into which a user may insert his fingers or hand to grip housing 13a and open door 115a.

In the event that graphics sheet 103a needs to be removed or replaced with another graphics sheet, fasteners 109a may be removed to allow door attachment 11a to move to the open position. Backing 105a should be carefully held in place while moving housing 13a upward and outward away from door 115a to prevent its contents from falling out. Backing 105a can then be removed to remove and/or replace sheet 103a. With the new graphics sheet 103a in place, backing 105a is replaced and housing 13a is lowered to the closed position and resecured to backplate 15a with fasteners 109a. This sequence of steps may be repeated as often as necessary. Door attachment 11a need not be removed from door 115a in order to perform this interchangeable feature.

Referring to Figure 11, a second embodiment of the invention known as door attachment 121a is shown. Like door attachment 11a, door attachment 121a comprises a housing which is not shown for simplification purposes, a backplate 123a and mounting hardware 125a. Backplate 123a and its housing are virtually identical to backplate 15a

and housing 13a, respectively, except for some slight dimensional variations which are used for illustration purposes. Backplate 123a has holes 127a,129a,131a which are identical in form and function to holes 71a,73a,75a in backplate 15a.

Mounting hardware 125a differs significantly from mounting hardware 17a. Mounting hardware 125a comprises a single, L-shaped component having a plate 141a and a mounting end 143a. A flange 145a integrally joins mounting end 143a to plate 141a. Plate 141a has holes 147a for joining mounting hardware 125a to backplate 123a, and mounting end 143a has holes 149a for joining mounting hardware to a door . In operation, door attachment 121a is formed in the same way and functions in the same manner as door attachment 11a, except for the way it is attached to the door. Similarly, the user may insert his fingers into the space between the door and backplate 123a to grip the housing and open the door.

Regarding the various embodiments of the present invention, that is, those handle apparatus and methods that incorporate exchangeable displays, though each has been described with particular reference to specific constructions thereof, it will be apparent to those skilled in the art that the same principles may be used in similar arrangements. Furthermore, it will be recognized that the invention is not limited to the precise structures described. These and other variations, which will also be appreciated by those skilled in the art, are within the intended scope of this invention as claimed below. As previously stated, detailed embodiments of the present invention are disclosed herein for example purposes; however, it is to be understood that the disclosed embodiments are merely exemplary of the invention that may be embodied in various forms.

DETAILED DESCRIPTION RELATING TO AN EARLY VERSION DOOR HANDLE, SHOWN IN FIGURES 15 AND 16, FROM WHICH THE PRESENT INVENTION DEVELOPED

Figure 15 illustrates a building 10b such as a retail store located in a strip center or other commercial structure which may be entered via either one of a pair of conventionally designed doors 12b. Each door 12b includes a first edge that is normally hinged to the building 10b, and a top edge, a second edge and a bottom edge each of which are free and thereby accommodate swing action of the door between open and closed configurations. Fixedly mounted to a front side surface of each door 12b is a door attachment 14b constructed in accordance with the present invention to incorporate a readily visible graphic design 16b. While the door attachment 14b disclosed is a door handle, it should be understood that the terms "handle" and "attachment" encompass a wide variety of types of door attachments, including push pads and the like. Furthermore, while the attachment 14b is shown mounted on the door 10b, it should be understood that the attachment is equally suitable for mounting on surfaces other than those described herein.

The door attachment 14b is mounted in proximity to the second edge opposite the first hinged edge so that the door 12b may be readily pivoted into an open position by grasping and pulling the door attachment 14b. The door attachment 14b should also be positioned sufficiently above the bottom edge of the door so that the door attachment 14b may be grasped with ease. For example, positioning the door attachment 14b about six inches from the second edge and about three feet above the bottom edge should be suitable for the uses contemplated herein. Based on a variety of factors, such as the design of the building exterior, the graphic design 16b to be displayed thereby and the intended use thereof, the door attachment 14b may be variously dimensioned. It is contemplated that a height of about ten and one-half inches and a width of about seven and one-half inches will be suitable for many of both the handle and push pad-type door

attachments. It should be noted, however, that some business logos are better suited for door attachments having dimensions and shapes other than those specifically described herein. It should be further noted that some commercial establishments prefer door-width handles and push pads which are typically sized to have a height of about six (6) inches and a width of about twenty-four (24) inches.

As shown in Figure 16, the door attachment 14b includes a first (or lower) body portion 17b, a second (or main) body portion 18b and a third (or upper) body portion 20b. In the embodiment illustrated, the main body portion 18b and the upper body portion 20b are transparent while the lower body portion 17b is opaque colored material. It should be understood, however, that a partially opaque or transparent material is equally suitable for use as the lower body portion 17b while partially or fully opaque materials may be selected for use as the main body portion 18b and some partially opaque materials may even be suitable for use as the upper body portion 20b. Of the various possible combinations of transparent, opaque and partially-opaque body portions, the most desirable combination for any given application of the invention will vary based on considerations such as coloration of the graphic display 16b and/or existence of any color combinations associated with the subject business establishment. Absent the existence of such a color combination, however, it is contemplated that an opaque white lower body portion 17b, in combination with the transparent main and upper body portions 18b and 20b, will be best suited for most applications.

A graphic display decal 16b is fixedly attached to the top side surface 18ib of the main body portion 18b. It is contemplated that a variety of techniques may be used to affix the graphic display 18b to the top side surface 18ib. For example, a sheet of adhesive vinyl having a layer of adhesive on a rear side surface thereof and on which the graphic display decal 16b has been printed or otherwise formed may be placed on the top side surface 18ib. The unprinted portions of the sheet are then pulled away, leaving the

graphic display 16b mounted on the top side surface 18ib. Alternately, the graphic display 16b may be imprinted on the top side surface 18ib, for example, using a stenciling process or the like. Of course, in this embodiment a front surface of the graphic display 16b will have a layer of adhesive. Furthermore, while the embodiment of the invention illustrated employs a graphic display decal 16b attached to the top side surface 18ib of the main body portion 18b, it should be understood that attaching a graphic display 16b to other surfaces of the door attachment 14b is equally suitable for the purposes contemplated herein. For example, graphic display decal 16b may be attached to a bottom side surface 20ib of the upper body portion 20b. In any event, however, to minimize wear of the graphic display 16b it is preferred that the display be a decal 16b which is attached to the door attachment 14b such that it will be sandwiched between a pair of body portions of the attachment.

In one embodiment, a first sheet of a transparent polyurethane 24b is placed between top side surface 17ib of the lower body portion 17b and bottom side surface 18iib of the main body portion 18. A second sheet of transparent polyurethane 26b is placed between top side surface 18ib of the main body portion 18b, including the graphic display decal 16b, and bottom side surface 20ib of the upper body portion 20b. The door attachment 14b is then heated to a temperature sufficiently high to melt the sheets of polyurethane and is then vacuum pressed to remove any air bubbles trapped between the top side surface 17ib of the lower body portion 17b and the bottom side surface 18iib of the main body portion 18b or between the top side surface 18ib of the main body portion 18b and the bottom side surface 18ib of the upper body portion 20b. The door attachment is then cooled to room temperature. By treating the door attachment 14b in this manner, the first and second sheets 24b and 26b of polyurethane melt to fuse, respectively, the top side surface 17ib of the lower body portion 17b to the bottom side 18iib of the main body portion 18b, thereby fixedly

securing the graphic display decal 16b therebetween, and the top side surface 18ib of the main body portion 18b to the bottom side surface 20ib of the top body portion 20b.

As described above, the door attachment 14b is configured to include an opaque lower body portion 17b, a transparent main body portion 18b, a transparent upper body portion 20b and a graphic display 16b fixedly secured between the transparent main body portion 18b and the transparent main upper body portion 20b. This embodiment is particularly well-suited to serve as a graphic display for a business establishment. Specifically, the graphic display decal 16b may be a business logo or other artistic rendering. Since the upper body portion 20b is transparent, the graphic display decal 16b is readily visible therethrough. The opaque lower body portion 17b provides a backdrop against which the graphic display decal 16b contrasts, thereby substantially enhancing visibility of the graphic display decal 16b. Furthermore, the transparent main body portion 18b spaces the graphic display 16b from the opaque lower body portion 17b, thereby causing the display 16b to appear positioned in a foreground relative to the contrasting backdrop created by the opaque lower body portion 17b. The transparent main body portion 18b further enhances the graphic display by providing a three-dimensional visual perspective.

While the preferred embodiment of the door attachment 14b includes lower, main and upper body portions 17b, 18b and 20b, it should be understood that alternate configurations may include various numbers of body portions. For example, a door attachment comprising a graphic display decal fixedly secured between either an opaque or transparent lower body portion and a transparent upper body portion may be suitable for some purposes. Furthermore, while edge side surfaces of the lower, main and upper body portions 17b, 18b and 20b preferably have slightly rounded edges, it is contemplated that the edge surfaces thereof may be formed in a variety of shapes while remaining within the scope of the invention.

As illustrated in Figure 16, a mounting bracket 28b fixedly secures the door attachment 14b to door 12b. As described herein, the mounting bracket 28b is metal. However, other hardened materials may be used to form the mounting bracket 28b. Furthermore, while it is preferred that the mounting bracket 28b be the same color as the opaque lower body portion 17b the mounting bracket 28b may be any of a variety of colors. Preferably, the color of the mounting bracket 28b is selected to correspond with the color scheme of the graphic display, particularly if the lower body portion 17b is transparent.

The mounting bracket 28b is preferably comprised of a first section 30b which secures the door attachment 14b thereto, a second section 32b configured for mounting the door attachment 14b and an intermediate section 34b which couples the first and second sections 30b and 32b. While the first and second sections 30b and 32b appear generally parallel with each other in Figure 16, the first section 30b is preferably slightly angled relative to the second section 32b.

A layer 36b of adhesive material such as epoxy or the like attaches bottom side surface 17iib of the lower body portion 17b to upper side surface 30ib of the first section 30b of the mounting bracket 28b. The mounting bracket 28b is secured to the door 12b by a pair of bolts 38b, one of which is visible in Figure 16.

In the illustrated embodiment, a pair of apertures 40b are formed in section 32b of the mounting bracket 28b. Preferably, one of the apertures is formed in proximity with a top edge thereof and the other is formed in proximity with a lower edge. In this configuration, torque applied to the door attachment 14b is evenly distributed when transferred to the door 12b, greatly reducing the likelihood that the door attachment 14b will be inadvertently detached from the door 12b. It should be understood, however, that disclosure of a pair of bolts 38b and corresponding apertures 40b is purely exemplary and that any number of bolts 38b may be used to secure the door attachment 14b to the door

12b. It is preferred, however, that the arrangement of apertures 40b in the mounting bracket 28b be configured similarly to standard door handles so that existing doors may be readily retrofitted with door attachments constructed in accordance therewith.

For embodiments wherein the door attachment 14b operates as a door pull handle, it is contemplated that the door attachment be provided with one or more gripping surfaces to aid usability thereof. As shown in Figure 16, the door attachment 14b is provided with two such gripping surfaces. More specifically, an indentation 44b is formed in the bottom side surface 17iib of the lower body portion 17b to provide a first gripping surface and a projection 46b extends outwardly from the first section 30b of the mounting bracket 28b to provide a second gripping surface. Preferably, the indentation 44b extends from top to bottom edge side surfaces of the lower body portion 17b while the projection 46b extends from top to bottom edge side surfaces of the first section 30b.

The door attachment described immediately above provides a suitable graphic display, but is not specifically designed to accommodate exchange of the display. By sandwiching a graphic containing layer between a top side surface of a main body portion and a bottom side surface of a substantially transparent upper body portion which are fused together. In this manner, the graphic display incorporated within the door attachment is both clearly visible and exceedingly wear-resistant. Furthermore, by selecting a transparent main body portion and fusing it to a an opaque lower body portion, a visually dramatic graphic display is formed which appears to be positioned in a foreground of a sharply constrasting backdrop.